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## **Hurricane coverage:**

### **1 — Harris County burns down last 6 of Arkema's chemical containers in Crosby, Houston Chronicle, 9/4/2017**

<http://www.chron.com/news/houston-texas/houston/article/Arkema-to-ignite-last-6-chemical-containers-in-12170734.php>

Harris County Fire Marshal's office set fire to the remaining six containers of chemicals at Arkema's Crosby plant, Sunday afternoon.

### **2 — Evacuation zone lifted near Crosby chemical plant after 'controlled burn', Houston Chronicle, 9/4/2017**

<http://www.chron.com/news/houston-weather/hurricaneharvey/article/Abbott-Rebuild-coastal-areas-to-abate-flood-12170525.php>

A day after a controlled burn destroyed six final trailers of decomposing chemicals, authorities lifted the 1.5-mile evacuation zone around the troubled Arkema chemical plant in Crosby.

### **3 — Abbott: Rebuild coastal areas to abate flood danger, Houston Chronicle, 9/3/2017**

<http://www.chron.com/news/houston-weather/hurricaneharvey/article/Abbott-Rebuild-coastal-areas-to-abate-flood-12170525.php>

Gov. Greg Abbott on Sunday endorsed imposing new development restrictions on rebuilding efforts from Hurricane Harvey to prevent future repeats of the disastrous flooding in the Houston area.

### **4 — Refineries start long recovery process as fuel logistics problems remain, Houston Chronicle, 9/3/2017**

<http://www.houstonchronicle.com/business/article/Refineries-start-long-recovery-process-as-fuel-12171143.php>

Texas oil companies have begun repairing seven flood-damaged refineries, the Energy Department said Sunday, marking the first step in a slow recovery after Hurricane Harvey swamped facilities that make about a quarter of the nation's gasoline.

### **5 — Exxon begins rebooting second-biggest U.S. refinery in Baytown, Houston Chronicle, 9/3/2017**

<http://www.houstonchronicle.com/business/energy/article/Exxon-begins-rebooting-second-biggest-U-S-12170579.php>

Exxon Mobil has begun restarting its giant Baytown refinery complex, which only needs minor repairs after flood waters swamped the facility, the company said.

### **6 — Texas expects EPA to 'get on top of' toxic water risk, AP, 9/3/2017**

<https://www.10tv.com/article/texas-expects-epa-get-top-toxic-water-risk>

Texas Gov. Greg Abbott said Sunday he expects the Environmental Protection Agency "to get on top" of the threat of possible water contamination after an Associated Press report of highly toxic waste sites flooded in the Houston area.

### **7— Amid West Houston Evacuations, Concerns Of Dirty Water Arise, CBS Houston, 9/3/17**

<http://houston.cbslocal.com/2017/09/03/amid-west-houston-evacuations-concerns-of-dirty-water-arise/>

Many parts of west Houston are under a mandatory evacuation order from the city's mayor. The water levels there continue to stay high as the nearby Buffalo Bayou is constantly overflowing from controlled releases of water.

**8 — Harvey's floodwaters mix a foul brew of sewage, chemicals, San Antonio Express-News, 9/4/17**

<http://www.expressnews.com/news/texas/article/Harvey-s-floodwaters-mix-a-foul-brew-of-sewage-12171231.php>

Harvey's filthy floodwaters pose significant dangers to human safety and the environment even after water levels drop far enough that Southeast Texas residents no longer fear for their lives, according to experts.

**9 — Breached levee in Plaquemines Parish mostly patched, officials say, New Orleans Times-Picayune, 9/4/17**

[http://www.nola.com/environment/index.ssf/2017/09/levee\\_breach\\_plaquemines\\_paris\\_1.html#incart\\_river\\_index](http://www.nola.com/environment/index.ssf/2017/09/levee_breach_plaquemines_paris_1.html#incart_river_index)

A levee breach that threatened to flood a stretch of Louisiana 23 in Plaquemines Parish has been largely plugged, parish officials said Sunday (Sept. 3). The hole opened Friday near Alliance due to tidal surge from Hurricane Harvey, and since then National Guard and parish crews have hastened to patch it with rocks and riprap.



<http://www.chron.com/news/houston-texas/houston/article/Arkema-to-ignite-last-6-chemical-containers-in-12170734.php>

## Harris County burns down last 6 of Arkema's chemical containers in C

By **Lindsay Ellis**, **Matt Dempsey**, and **Keri Blakinger**



**Now Playing:** Arkema ignites last six chemical containers in Crosby, Texas

### IMAGE 1 OF 12

Smoke is visible coming from the Arkema Inc. plant Sunday, September 3, 2017, in Crosby. A spokeswoman for the Harris County Fire Marshal's office said Sunday afternoon that the Arkema Inc. plant is igniting ... [more](#)


Harris County Fire Marshal's office set fire to the **remaining six containers of chemicals** at Arkema's Crosby plant, Sunday afternoon.

Spokeswoman Rachel Moreno refused to provide any details about what was done to set the material on fire, citing "safety and security aspects' of the operations.

"We did it in a very safe manner," Moreno said.



Crosby residents saw thick pillars of black smoke



around the area until about 5 p.m., though Moreno could not confirm if the fire was

still burning at that time. A 1.5-mile radius

The fire marshal's office called the ignition minimize the impacts to the community."

The public was not told about the change release was sent out by both Arkema and

**Now Playing: Arkema ignites last six chemical containers in Crosby, Texas**

John Rull was sitting on his porch in New Port, three miles from the evacuation zone, when he heard the two big booms, back to back. Another boom shook the skies about 30 seconds later, he said, and several minutes later, he heard a fourth.

Suddenly, black smoke started to unfurl, covering a wide span of the sky. Half an hour later, the black smoke lingered.

Rull, 30, had been jolted by the explosion on Friday, which he also heard from his home, 2 miles from the Crosby plant. This series was louder and created much more smoke, he said.

"We're just hoping it's all over and done with now," he said, adding that the company gave him no indication that it would combust the materials. "We've been on pins and needles waiting to see if we'd have to leave."

It's not the first time the company and government officials have kept the public in the dark over the situation at Arkema.

This week, the company and the Texas Commission on Environmental Quality both refused to provide a chemical inventory of the plant to the public. While the Environmental Protection Agency did air monitoring at the site, it did not release the data from those monitors. The EPA did say the monitoring showed there were no "toxic concentrations" away from the evacuated zone.

Arkema issued a press release late Sunday afternoon saying destruction efforts started at 5 p.m. but Rull and others say they saw smoke from the site more than hour before

that.

Rull, who works as a chemical blender in Seabrook, said that while he understands that companies in many situations keep inform nervous as a citizen and wanted Arkema t the vans.

"You don't know what's in there. You don't secrets is up," Rull said.

Company officials, who said they made th said they believe that the chemicals in the chemicals, highly volatile organic peroxide: temperatures rise, have been decomposing

**Now Playing: Arkema ignites last six chemical containers in Crosby, Texas**



Without the vehicles catching flames, howe chemicals are totally neutralized, spokesm

The company needs to be confident that the chemicals are no longer active before it sends in safety officials and air quality observers, Carr said.

"There's quite a lot to do, and nothing's going to happen until the chemicals burn down," Carr said.

The EPA called the operation a "controlled burn" of the material in a statement.

The TCEQ said the decision aimed to prevent "additional damage to the facility or spreading into the surrounding area" in a statement Sunday. First responders are in the area, but outside evacuation radius, that agency said.

Up to this point, agencies were in public agreement that a 1.5 mile evacuation radius was conservative and highly unlikely to need extending.

It is not yet when families will be able to move back into their homes in the evacuation zone. Carr said flooding around the plant had diminished by Sunday afternoon.

"Once the fire has gone out, they'll go in and make sure the air quality is good, the water quality is good and then it'll be a process of letting people know that they can come back in," Moreno said. "But they won't be back until it is 100 percent safe for them to go back."

Arkema said at 6:30 p.m. that the six containers that residents should not return home yet.

#### **FROM THE EPA: Harvey flooded or damaged**

Two of the company's nine containers caught fire, **Now Playing: Arkema ignites last six chemical containers in Crosby, Texas** and another container igniting early Thursday morning. Fires with the volatile chemicals caused plumes of black smoke and towering flames at the plant, which is northeast of Houston.

Initially, the company said it would not destroy or neutralize the chemicals. It also considered moving the chemicals but deemed that process too risky.

The six containers ignited Sunday were "kind of grouped together," Moreno said.

"For us to be in a position where we were going to put that material into trailers and try to move it, it runs the risk of not being able to get it out of the area or getting it stuck in traffic, or having a fire or an explosion at a highway or at a public area, versus in the rural area where this site is," Daryl Roberts, a company safety official, said.

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**H E A R S T**

## 7:45 a.m. Evacuation zone lifted near Crosby chemical plant after 'controlled burn'

A day after a controlled burn destroyed six final trailers of decomposing chemicals, authorities lifted the 1.5-mile evacuation zone around the troubled Arkema chemical plant in Crosby.

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### TRANSLATOR

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To read this article in one of Houston's most-spoken languages, click on the button below.

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The company announced the decision early Monday morning in a press release crediting the Crosby Fire Department and unified command.

"Arkema thanks the unified command for their hard work and professionalism to ensure the safety of all during the post-Hurricane Harvey period," the statement said.

"Arkema will continue to work with its neighbors and the community to recover from the substantial impact of Hurricane Harvey."

**Chron** <http://www.chron.com/news/houston-weather/hurricaneharvey/article/Abbott-Rebuild-coastal-areas-to-abate-flood-12170525.php>

## Abbott: Rebuild coastal areas to abate flood danger

By **Mike Ward** Published 12:27 pm, Sunday, September 3, 2017



Texas Governor Greg Abbott hugs a child while visiting Tropical Storm Harvey evacuees at NRG Center in Houston Saturday, Sept. 2, 2017.

AUSTIN -- Gov. Greg Abbott on Sunday endorsed imposing new development restrictions on rebuilding efforts from Hurricane Harvey to prevent future repeats of the disastrous flooding in the Houston area.

In the past, local plans to limit and control runoff from large-rainfall storms have been sidetracked by high costs and by opposition from business and development interests in a city without zoning controls.

Abbott's comments appeared to put him on the side of new development limits, surely for additional flood-control protections, in a city where the issue has been politically challenging for decades.

"As we go through the build-out phase, and rebuilding Texas, part of our focus must be on rebuilding in a way that will prevent a disaster like this from happening again," he told reporters before speaking during Sunday services at the Hyde Park Baptist Church, on the official Day of Prayer he proclaimed last week in Harvey's aftermath.

"An easy thing to say about this is we need to create the water ways and the water runoff, capture and distribution, in ways that we will be able to get flood waters out of the way without it creeping back up into flooding houses and other buildings."

He continued: "There are other strategies that we are looking at . . . studies that have been undertaken already that we can build upon to make sure that we do a better job to prevent this type of flooding in the future."

As part of his continuing message of collaboration with local officials, Abbott said he has pledged for the state to work as a team with Houston and Harris County in rebuilding to be more flood-smart. He said he discussed that on Saturday with Houston Mayor Sylvester Turner and Harris County Judge Ed Emmett.



"The lead on this, as far as design and implementation is concerned, will be Houston and Harris county for that region," Abbott said. "Texas will be involved in that process. but also Texas needs to be involved in other regions, whether its the Beaumont region or other parts of the state that have suffered flooding."

The governor also said the federal government will be a part of the collaboration on solutions to guard against another Harvey-like flood disaster -- which some officials speculate could top \$200 billion in damages, larger than costly hurricanes Rita and Sandy combined.

Abbott said during an appearance on CNN Sunday that he thinks the losses will top \$120 billion.

Later Sunday, Abbott was scheduled to huddle in Austin with U.S. House Majority Leader Kevin McCarthy, R-California, to discuss federal disaster assistance funding for Texas. Since the storm hit, Abbott has been working with Senate and House officials to ensure that enough disaster relief is allocated by Congress to cover the losses, and President Donald Trump in two trips to Texas has assured Abbott and other state leaders that the federal government stands ready to provide enough assistance to speed the recovery.

"Heading to Texas this weekend. The House stands ready to help restore, recover, and rebuild. #TexasStrong," McCarthy tweeted on Thursday, in advance of his trip.

Appearing at the Austin's church's 11 a.m. service to offer a prayer for Texas' recovery, Abbott told members of the congregation at the 3,000-plus member church that during a tour of Houston on Saturday with President Trump he was heartened to see tall mounds of debris piled up in many yards as Texans already have moved into the rebuilding phase.

"Texas and Houston are mending quickly," he said.

Aides said Abbott, a Catholic, planned to attend Mass with his wife later Sunday.

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**HEARST**

# Refineries start long recovery process as fuel logistics problems remain

**GAS: Repairs start at 7 refineries, but logistical problems may limit supplies**

By Collin Eaton | September 3, 2017 | Updated: September 3, 2017 11:37pm

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Photo: BRYAN THOMAS, STR

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#### IMAGE 1 OF 3

Plastic bags indicate no gasoline at a RaceWay gas station in Houston, Sept. 1, 2017. Nationally, the average price of a gallon of regular gasoline continues to hit new highs for the year, and there are some ... [more](#)

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Texas oil companies have begun repairing seven flood-damaged refineries, the Energy Department said Sunday, marking the first step in a slow recovery after Hurricane Harvey swamped facilities that make about a quarter of the nation's gasoline.

Another nine major refineries remain completely offline, and some may not fully reboot for a month. And though the region's storage tanks have plenty of gasoline, a myriad of logistical problems in getting that fuel to the pump could continue to crimp supplies and keep prices elevated across the state. Companies still will have to deal with flooded or damaged roads, stalled-out trucks and closed pipelines and ports.

"All the trucks' transmissions got full of water," said Phillip Cavazos, a trucking company worker in Port Arthur, home to three major oil refineries. "We can't move. We wouldn't have been able

to get on the road anyway."

## HIDDEN DANGER: Chemical facilities face danger during Harvey shutdowns

In Houston, the average price for a gallon of regular increased to \$2.42, which is 6 cents higher than the day before and up 25 cents from a week ago, according to AAA. Analysts expect gas prices to keep moving up next week, especially if panicked motorists continue to compound the supply problem.

As gasoline prices spike in Houston, major markets in the eastern United States could eventually feel the fuel pinch, too, as key pipelines dramatically reduce the amount of gasoline carried outside the Texas Gulf Coast.

The 5,500-mile Colonial Pipeline, which runs from Houston to New York, has sent far less gasoline eastward after floods knocked out more than a dozen major refineries along the coast and reduced the nation's capacity to make gasoline by almost a quarter. "You may see bigger gas price jumps in New Jersey than in Texas," said Tom Kloza, an oil analyst at Oil Price Information Service.

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### TRANSLATOR

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### BUSINESS

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"Houston is the size of Connecticut, and that's clearly a problem, but demand destruction has been pretty significant."

The gasoline shortfalls may not be as acute in Houston because Harvey destroyed thousands of cars in the region and the city is only slowly getting back to work. Still, motorists across the United States will take to the streets on Labor Day - a day of high gasoline demand.

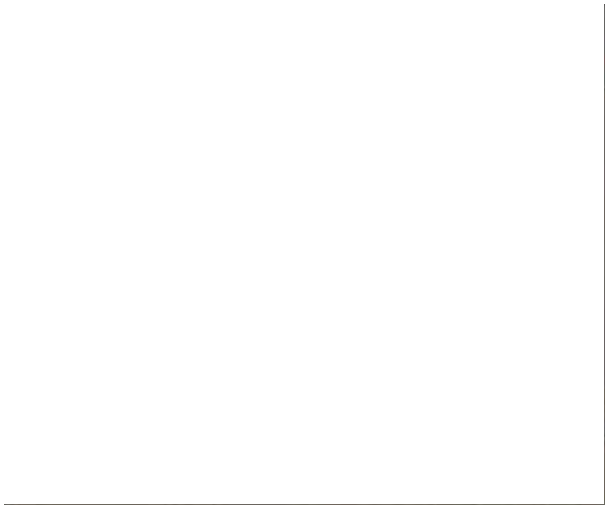
"During driving season, there's never a glut of gasoline," Kloza said. "When the logistics get crippled or the organs that supply gasoline get knocked down, it can be just intolerable. That's what happens after a hurricane."

No timeline yet

The nine refineries still offline usually turn 2.4 million barrels of crude into petroleum products each day. Four other refineries were still operating at reduced capacity, and one had reached full production. All told, Harvey initially knocked out almost a quarter of the nation's refining capacity.

Even the refineries that have begun assessing the damage left by Harvey will have to fix logistical problems before they can restart. Several seaside ports and major railways across the Gulf Coast remained closed over the weekend.

Exxon Mobil, for example, said its Baytown refinery, the second-largest facility of its kind in the United States, needs only minor repairs before it goes back into production. But it has no timeline because it needs ports and railways to reopen, said Suann Guthrie, a spokeswoman for Exxon.



The Irving-based oil giant has begun working with the Port of Houston to speed up tanker traffic coming through the Houston Ship Channel, and helped coordinate repairs to nearby railroads. Its pipeline unit has made progress restarting pipelines "so we can initiate supply of gasoline and diesel to the market," she said.

Houston refiner Phillips 66 said Sunday that trucks are now loading fuel from a terminal in Pasadena, and the company has begun examining the damage to its Sweeny refinery 70 miles southwest of Houston.

#### HARVEY AFTERMATH:: As Houston dries out, rescues and recovery continue

Ports in Corpus Christi, Galveston, Houston, Texas City, Beaumont, Port Arthur, Lake Charles and several others were still only partially open to tankers. Those commercial traffic hubs usually collect some 2 million barrels of crude imports each day combined.

Rail company BNSF had reopened in Houston and Galveston but remained shuttered in Beaumont. Union Pacific lines were active between San Antonio and Hearne, but cleanup operations were ongoing in parts of Houston and South Texas.

### Getting back online

Facilities along the length of the Colonial Pipeline, which carries oil to more than two dozen U.S. refineries, were still inoperable between Houston and Herbert, which is near the Beaumont and Port Arthur stations, though crews have begun reviewing the flood damage.

Pipeline operator Magellan Midstream Partners said two major arteries that carry oil from West Texas to the coast have rebooted, as has a refined products pipeline that begins in Houston.

Some refineries in Corpus Christi could be back online as early as Tuesday, which would help ease the local fuel market, according to AAA. Still, the logistical problems make it harder to predict how long it will take fuel to reliably reach local gas stations and how long it takes gasoline prices to fall back down again, said Daniel Armbruster, a spokesman for AAA.

"It doesn't turn on a dime," he said.



**Collin Eaton**

Business Reporter,  
Houston Chronicle

# Exxon begins rebooting second-biggest U.S. refinery in Baytown

By **Collin Eaton** | September 3, 2017

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Photo: Melissa Phillip, Staff

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**IMAGE 1 OF 2**

Exxon Mobil has a refining complex in Baytown. Some refineries are restarting.

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Exxon Mobil has begun restarting its giant Baytown refinery complex, which only needs minor repairs after flood waters swamped the facility, the company said.

Exxon's Baytown refining is the second-largest facility of its kind in the United States, with a refining capacity above 560,000 barrels a day.

"We're making good progress," said Suann Guthrie, a spokeswoman for Exxon. "But the timing depends on the availability of transportation infrastructure" to get fuel to markets.

Exxon has been working with the Port of Houston to expedite vessels traveling through the Houston Ship Channel and helping to coordinate repairs to railroads in the region, she added.

# Texas expects EPA to 'get on top of' toxic water risk



NATIONAL NEWS

A barbed-wire fence encircles the Highlands Acid Pit that was flooded by water from the nearby San Jacinto River as a result from Harvey. (AP Photo/Jason Dearen)

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PUBLISHED: 09/03/17 02:29 PM EDT UPDATED: 09/03/17 02:29 PM EDT

**WASHINGTON** — Texas Gov. Greg Abbott said Sunday he expects the Environmental Protection Agency "to get on top" of the threat of possible water contamination after an Associated Press report of highly toxic waste sites flooded in the Houston area.

"The EPA is monitoring that. The EPA is going to get on top of that," said Abbott, when asked on "Fox News Sunday" whether toxic floodwaters could pose a continuing health threat to Texas residents.

"We are working with the EPA to make sure that we contain any of these chemicals harming anybody in the greater Houston area or any other place," he said.

The Houston metropolitan area is home to more than a dozen Superfund sites, designated by the EPA as being among America's most intensely contaminated places. The AP surveyed seven of

them and reported Saturday that all had been inundated with water, in some cases many feet deep, raising the concern that floodwaters may wash in pollution.

An EPA statement later confirmed the AP's reporting that the federal agency had not yet been able to physically visit the Houston-area sites, saying the sites had "not been accessible by response personnel." EPA staff had checked on two Superfund sites in Corpus Christi on Thursday and found no significant damage.

On Sunday, Abbott said there will always be a threat of contaminated water whenever there is a flood situation.

"What people need to do is they just need to be very cautious in the way they respond," he said. "Do things like wear gloves, wear a mask, wear clothing so that your skin is not going to brush up against what you're cleaning."

Houston Mayor Sylvester Turner said he was comfortable with the safety of Houston's drinking water, saying the Superfund sites were outside the city.

"Certainly, we would hope that the EPA would be on the ground now to take a look at those Superfund sites, to make sure that contamination is contained and limited," he said.

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## Amid West Houston Evacuations, Concerns Of Dirty Water Arise

September 3, 2017 10:16 PM

Filed Under: [Contaminated Water](#), [dirty water](#), [e coli](#), [Harvey](#), [houston](#)



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A part of the Briarforest neighborhood of Houston remains under about three feet (one meter) or more of floodwater September 3, 2017, one week after the city was deluged by mega-storm Harvey. (MICHAEL MATHES/AFP/Getty Images)

**HOUSTON (CBSDFW.COM)** – Many parts of [west](#) Houston are under a mandatory evacuation order from the city's mayor.

The water levels there continue to stay high as the nearby Buffalo Bayou is constantly overflowing from controlled releases of water.

Now, neighbors there say their main concern is all the contaminants in the water that is expected to keep their streets flooded for at least another 12 [days](#) .

Melissa Karen, a longtime resident of [west](#) Houston said, "I'm afraid this water is going to get mosquitoes there's snakes it's going to contaminate this area. What if this is condemned and we've been living here for 17 years."

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CNN [reports](#) water samples they took from flooded waters in Houston have tested for an alarming amount of E. coli bacteria.

They reported one of their highest samples taken earlier this week showed 8,600 colony-forming units or CFU's of E. coli in the water. The EPA standard is zero.

Many of the residents realize the water is dirty and the continuous releases of more water into their neighborhood aren't safe to try and weather.

However, they say it took a stern order from the mayor, Sylvester Turner, to get to them to leave.

Karen added, "I'm a native Houstonian. My parents are from Houston. My grandparents are from Houston. I'm not running away and going to move somewhere else. This is all I know is Houston... it's really upsetting. I can't even believe this is happening."

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# Harvey's floodwaters mix a foul brew of sewage, chemicals

JOHN FLESHER, AP ENVIRONMENTAL WRITER

September 3, 2017 | Updated: September 4, 2017 8:58am

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Photo: Charlie Riedel, AP

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IMAGE 1 OF 3

FILE - In this Aug. 31, 2017 file photo, Alejandra Castillo takes a break from carrying water-soaked items out of her family's home after flood waters receded in Houston. Experts say Harvey's filthy ... [more](#)

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Harvey's filthy floodwaters pose significant dangers to human safety and the environment even after water levels drop far enough that Southeast Texas residents no longer fear for their lives, according to experts.

Houston already was notorious for sewer overflows following rainstorms. Now the system, with 40 wastewater treatment plants across the far-flung metropolis, faces an unprecedented challenge.

State officials said several dozen sewer overflows had been reported in areas affected by the hurricane, including Corpus Christi. Private septic systems in rural areas could fail as well.

Also stirred into the noxious brew are spilled fuel, runoff from waste sites, lawn pesticides and pollutants from the region's many petroleum refineries and chemical plants.

The U.S. Environmental Protection Agency reported Sunday that of the 2,300 water systems contacted by federal and state regulators, 1,514 were fully operational. More than 160 systems issued notices advising people to boil water before drinking it, and 50 were shut down.

The public works department in Houston, the nation's fourth-largest city, said its water was safe. The system has not experienced the kind of pressure drop that makes it easier for contaminants to slip into the system and is usually the reason for a boil-water order, spokesman Gary Norman said.

In a statement Thursday, federal and state environmental officials said their primary concerns were the availability of healthy drinking water and "ensuring wastewater systems are being monitored, tested for safety and managed appropriately."

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### TEXAS

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**Mayor : Houston 'open for business' despite Harvey disaster**



**Harvey's floodwaters mix a foul brew of sewage, chemicals**

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About 85 percent of Houston's drinking water is drawn from surface sources — rivers and reservoirs, said Robin Autenrieth, head of Texas A&M University's civil engineering department. The rest comes from the city's 107 groundwater wells.

**Mnuchin: Congress needs to tie Harvey aid to debt limit bill**



"I would be concerned about what's in the water that people will be drinking," she said.

The city met federal and state drinking water standards as well as requirements for monitoring and reporting, said Andrew Keese, spokesman for the Texas Commission on Environmental Quality.

Keeping it that way will require stepped-up chemical treatments because of the flooding, Norman said.

It's prudent to pump more chlorine and other disinfectants into drinking water systems in emergencies like this, to prevent outbreaks of diseases such as cholera and dysentery, said David Andrews, senior scientist with the Environmental Working Group, an advocacy organization. But doing so poses its own risks, he said.

There's often more organic matter — sewage, plants, farm runoff — in reservoirs or other freshwater sources during heavy rains. When chlorine reacts with those substances, it forms chemicals called trihalomethanes, which can boost the risk of cancer and miscarriages, Andrews said.

"Right now it's a tough time to deal with that, when you're just trying to clean the water up and make sure it's not passing illnesses through the system," he said. "But we should do better at keeping contamination out of source water in the first place."

Federal and state officials said about two-thirds of approximately 2,400 wastewater treatment plants in counties affected by Harvey were fully operational. They said they were monitoring facilities with reported spills and would send teams to help operators restart systems.

Sewage plants are particularly vulnerable during severe storms because they are located near waterways into which they can discharge treated water, said Autenrieth of Texas A&M. When they are flooded, raw or partially treated sewage can spill from pipes, open-air basins and tanks.



A report by the nonprofit research group Climate Central said more than 10 billion gallons of sewage was released along the East Coast during Superstorm Sandy.

The Houston Chronicle reported last year that Houston averages more than 800 sewage overflows a year and is negotiating an agreement with the EPA that would require system improvements.

Norman said Houston didn't have a running tally of overflows during Harvey.

"Anytime you have wet weather of this magnitude, there's going to be a certain amount of sanitary sewage that escapes the system," he said. "That's one reason why we advise people to stay out of floodwaters."

A Texas A&M analysis of floodwater samples from the Houston area revealed levels of *E. coli* — bacteria that signal the presence of fecal matter — 125 times higher than is safe for swimming. Even wading through such tainted water could cause infections and sickness, said Terry Gentry, an associate professor and specialist in detecting tiny disease-producing organisms.

"Precautions should be taken by anyone involved in cleanup activities or any others who may be exposed to floodwaters," said a statement from the U.S. Environmental Protection Agency and the state environmental quality commission.

They said they were developing a plan to sample residential wells.

Hazards will remain as waters gradually recede. Puddles, tires and other spots for standing water will attract mosquitoes, which can spread viruses such as West Nile and Zika, Autenrieth said.

Much of the dirty water will flow through rivers, creeks and bayous into Galveston Bay, renowned for its oyster reefs, abundant wildlife and seagrass meadows. Officials will need to monitor shellfish for signs of bacterial contamination, said Doug Rader, chief ocean scientist for the Environmental Defense Fund.

The waters also may be rich with nitrogen and phosphorus, which feed algae blooms. When algae die and rot, oxygen gets sucked from the water, creating "dead zones" where large numbers of fish can suffocate.

"You have a potential for localized dead zones in Galveston Bay for months or maybe even longer," Rader said.

The bay opens into the Gulf of Mexico, where a gigantic dead zone forms in summer, powered by nutrients from the Mississippi River. This year's was the largest on record, said oceanographer Nancy Rabalais of Louisiana State University.

Ironically, Hurricane Harvey may have done the environment at least one favor by churning the Gulf's waters and sending an influx of oxygen from the surface to the depths. "A temporary silver lining," Rabalais said.

But that also happened after 2005's Hurricane Katrina, she added. "And within a week, the low-oxygen area had redeveloped."

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LOUISIANA ENVIRONMENT AND FLOOD CONTROL

## Breached levee in Plaquemines Parish mostly patched, officials say

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NOLA.com | The Times-Picayune

A levee breach that threatened to flood a stretch of Louisiana 23 in Plaquemines Parish has been largely plugged, parish officials said Sunday (Sept. 3). The hole opened Friday near Alliance due to tidal surge from Hurricane Harvey, and since then National Guard and parish crews have hastened to patch it with rocks and riprap.

Michael Powell, a spokesman for the parish government, said crews stuffing the breach with rocks had reduced the water flow "to a little trickle" by Sunday at 3 a.m. He said parish officials were expecting more barges loaded with rocks and riprap to close the gap, and that crews will begin covering the rocks with dirt and clay on Tuesday.

"The initial threat of the levee being unsealed has passed," Powell said.

Situated in a remote area near the Phillips 66 oil refinery, the breach began as a small hole but widened to a more than 50 feet. Parish President Amos Cormier III said Friday that the levee is owned by a private company that's in bankruptcy.

Powell said no homes were in danger. Rather, Powell said, the water threatened to flood Louisiana 23, just as it did when the same levee breached last summer during the Louisiana Flood of 2016.

When intact, the levee blocks water that flows from The Pen through canals toward the highway, Powell said. But once the levee is breached, the water flows into a cow pasture set between the levee and the highway, and if the pasture brims over, the highway floods.

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Despite the scare, Powell said, this breach wasn't as bad as last year's, when he said the parish had to call in Black Hawk helicopters from the National Guard to mend the levee. "It's not a place that's easy to get to by land," Powell said.

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